

SHE Task Notes

Communication and Collaboration

- Science is a global enterprise that relies on clear communication, international conventions, and review and verification of results.
- International collaboration is often required in scientific investigation.

Application and Limitation

- Scientific knowledge, understanding, and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, cultural, and environmental impacts, offer valid explanations, and make reliable predictions.
- The use of scientific knowledge may have beneficial or unexpected consequences; this requires monitoring, assessment, and evaluation of risk and provides opportunities for innovation.
- Science informs public debate and is in turn influenced by public debate; at times, there may be complex, unanticipated variables or insufficient data that may limit possible conclusions.

Why Are Zoos Good

They are very important for conservation and educational purposes on animals. More specifically, they are important for endangered species – many animals are critically endangered in the wild but are going strong in zoos. Many species have gone extinct in the wild and only survive because of populations that are kept going in captivity.

General principles of species conservation

Explain connection between conservation efforts and SHE

What's the problem? The problem that is currently surrounding conservational efforts is the decrease in species on the planet. The list of endangered species continues to grow as the years progress.

How is it a problem? It is a problem because studies have shown how unchecked deforestation and species extinctions directly impact human well-being. Even little species can provide a benefit to human such as drugs that combat cancer.

Why is it a problem – decrease in biodiversity

How is it being monitored – in zoos + wild

What is being done to fix

“this is evidence of (SHE concept) because.....”

Or

“evident of (SHE concept) is....”

Outline of the Problem

There are many threats to species survival. Global biodiversity is being lost much faster than natural extinction because of the changes in land use, unsustainable use of natural resources, invasive alien species, climat change and pollution as well as other threats. These things are



Commented [CE1]: You need references. I suggest that you use the Adelaide or Monarto website, the national geographic and any other reputable source. Do not forget to include in-text references and a reference list.

Think about using a diagram or graph that shows how many species are endangered.

Commented [CE2]: This is the start of a good answer to why species conservation is important. You need to explain why biodiversity is important i.e. increased biodiversity leads to more stable ecosystems. A stable ecosystem is more likely to resist change, and therefore it can continually provide for a habitat for organisms and provides humans with benefits too i.e. natural resources, food and medicine.

causing the number of species to gradually decrease until they are extinct. This affects the ecosystem and biodiversity because studies have shown how unchecked deforestation and species extinction directly impacts human well-being.

Commented [CE3]: Excellent information. You need to include an in-text reference.

A Description of the Conservation Efforts

Conservation efforts aim to protect natural resources. With the gradual destruction of our ecosystems and natural habitats have caused an imbalance in the biodiversity. Conservation efforts are important because without them, the ecosystem can easily fall apart with species going extinct and this affecting other species. Unlike natural extinction, this is going at a much quicker rate therefore giving species less time to be able to adapt so they end up going extinct as well until there is barely any biodiversity in the ecosystem. Some techniques that are being employed for conservation efforts by humans are zoos. They are a vital part to conservation efforts. They help conserve endangered species and this prevents the species from going completely extinct. Modern zoos aim to promote animal conservation while also educate people, support further wildlife research. Also, groups that try to reduce pollution by picking up rubbish or days like *Pick up Australia Day* is another way to try and help with the environmental conservation. In zoos, they breed animals and look after them so that the species don't die out. For example, the pandas at Adelaide Zoo. The Giant Panda's, Wang Wang and Fu Ni, are part of the international Giant Panda research, conservation and breeding program that is designed to preserve their species. Ways that the international Giant Panda research is trying to work on preserving the pandas is by helping develop a scientific knowledge on about pandas and their reproductive biology as well as their nutritional requirement. They are also looking at how the panda's have been affected by living in a different hemisphere on the nutritional requirements and biological reproduction. This is just one example on exactly how a technique is trying to help the conservation by having zoos.

Commented [CE4]: I like that you included all aspects of environmental protection, but this information is not necessary.

A Critical Discussion of the Conservation Efforts

A challenge that zoos face are animals being abused by visitors who can chuck objects sometimes or who leave rubbish lying around. This rubbish can get into enclosures and affect the well being of the animals. Other challenges would be humans and the levels of carbon dioxide that is released into the atmosphere daily. Unfortunately, we can't just completely cut out all carbon dioxide levels in every city, but people can try to minimize deforestation by using more recyclables. This way, there would be more trees to still and try to photosynthesis and turn carbon dioxide into oxygen. There are a few alternative techniques that are being considered for the future. The primary focus is upon maintaining the health of the natural world, its fisheries, habitats and biological diversity. Then the secondary focus is on material conservation including non-renewable resources and finding alternative energy sources.

Commented [CE5]: There is a lot of information that is not needed. The focus is the conservation of animals in zoos to increase their population for release into the wild.

You need to comment on how zoos like Adelaide and Monarto help with conservation. An example is that species play an important role in their natural habitats, and so, by breeding them in captivity for release, it will improve the biodiversity of the earth's ecosystems.

You could explain breeding techniques i.e. natural or artificial insemination or what the nutritional research involves i.e. a type bamboo improves panda health. Please make sure you reference the information you present.

You should then state that this brings about species survival by increasing the population of endangered species, and when released to the wild, it will improve biodiversity.

A Discussion of Science as a Human Endeavour Connects to Conservation

Conservation efforts can connect to both Communication and Collaboration as well as Application and Limitation. Zoos are a good example for both SHE key concepts. There are many programs that help with animals that are looked after at the zoo. They have international and national research groups that try and discover more and more ways that would affectively help with conservation and they spread the word through articles and putting information on signs in front of enclosures for people to be able to read and understand the different species a little more which also helps them understand the importance of them being around for the ecosystem and to humans as well. With Application and Limitation, zoo's are one of the best ways to go about it. At zoo's researchers can monitor the animals and see how they react and feel to different climates to which they may not be fully adapted to such as the Giant Panda's that came from China. There are limitations however to preserving the conservation and the

Commented [CE6]: You need to link deforestation to something i.e. loss of animal habitat. This can be presented as "a challenge is that zoos protect animals, the animals in the wild are at risk due to human activity such as deforestation for the purpose of urbanisation or agriculture.

Excess carbon dioxide isn't relevant here. You can leave this information out.

animals due to them being in different hemispheres sometimes from their natural habitats and that can cause a change and may also create invalid results that may not help the species that are out in the wild because the animals at the zoo's would be used to different weather, climate, and sometimes maybe even food or how they eat their food. These limitations can somewhat affect the conservation efforts.

Overall however, it is important to do everything we can to help with conservation efforts because the ecosystem cannot handle having so much unbalance in the biodiversity.

Commented [CE7]: Well done! I would like you to clarify the limitation. You can say something like "the limitation of research in captivity is that the conditions are not identical to the animals' natural habitat, this can effect the data collected by researchers".